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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/551,349	10/10/2006	Katsuhiko Kohyama	OCW-008US	4569
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EXAMINER				
MERCADO, JULIAN A				
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

Application No.

10/551,349

Applicant(s)

KOHYAMA ET AL.

Examiner

JULIAN MERCADO

Art Unit

1795

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SF/88)  
Paper No(s)/Mail Date 9-28-05
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_

## **DETAILED ACTION**

### ***Remarks***

Claims 1-12 are pending.

### ***Information Disclosure Statement***

The Information Disclosure Statement (IDS) filed on September 28, 2005 has *not* been considered by the examiner. It is noted that applicant has not enclosed copies of the cited publications insofar as these publications and the corresponding search report were deemed previously transmitted to all the designated Offices by the International Bureau. (IDS cover sheet remarks on page 1) However, the examiner notes that only the search report has been transmitted by the International Bureau. The examiner will reconsider the cited publications upon submission of copies by either applicant or the International Bureau.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 1 is rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for joining of the first jutting-out portion and second jutting-out portions via mutually opposed surfaces of its peripheries, does not reasonably provide enablement for these components being "joined together over the entire peripheries thereof", as recited in lines 19-20..

The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims. See Figure 7, which shows the components being joined by cured adhesive layer [17] as an intervening layer between the major surfaces thereof and not along the peripheries, i.e. its edges.

Claims 5 and 6 are rejected under 35 U.S.C. 112, first paragraph, as being dependent upon a rejected base claim.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-6, 9 and 12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the limitation "the periphery" in line 18. There is insufficient antecedent basis for this limitation in the claim.

Claim 2 in line 18, claim 4 in line 2 and claim 12 in line 3 each recites a similar limitation to claim 1 and is rejected on the same grounds.

Claim 1 recites the limitation "the entire peripheries" in line 20. There is insufficient antecedent basis for this limitation in the claim.

Claim 2 in line 23 recites a similar limitation to claim 1 and is rejected on the same grounds.

Claims 1, 2, 4 and 12 each recites "the peripheries" and "the periphery" for the first jutting-out portion and the second jutting-out portion, respectively. As these portions are joined together over "the entire peripheries thereof" (line 20, line 26, line 4 and line 5 of the claims, respectively), it is unclear how a singular periphery can be joined to plural peripheries.

Claim 1 recites the limitation that the second electrode is "surrounded by the cured adhesive layer" in line 26. There is insufficient antecedent basis for this limitation in the claim.

Claim 3 in line 2 recites a similar limitation to claim 1 and is rejected on the same grounds.

Claim 3 recites the limitation "the outer edge" in line 3. There is insufficient antecedent basis for this limitation in the claim. Additionally, it is unclear from the scope of the claim how the outer edge of the electrode layer is mutually exclusive from a previously recited periphery thereof.

Claim 9 recites the limitation "in the electrode structure (7) a portion of the second jutting-out portion" in line 2. This limitation is indefinite, as the second jutting-out portion is understood to be part of the second gas diffusion layer and not the electrode. See col. 7 line 8, from which claim 9 depends.

Claim 12 recites the limitation "the first separator" in line 10. There is insufficient antecedent basis for this limitation in the claim. Additionally, it is unclear from the scope of the claim how

Claim 12 recites the limitation "the second separator" in line 13. There is insufficient antecedent basis for this limitation in the claim.

Claims 3-6 are rejected under 35 U.S.C. 112, second paragraph as being dependent upon a rejected base claim.

### ***Claim Interpretation***

The examiner notes that one aspect of the claimed invention is drawn to jutting-out portions of one layer "that juts out from" the periphery of another. As these layers (e.g. the electrode layers [11, 12] and diffusion layers [13, 14] are clearly on different planes, the claimed feature of one layer jutting-out from the periphery of another is interpreted as one layer jutting-out *past* the periphery of the other.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 2 and 5-10 are rejected under 35 U.S.C. 102(b) as being anticipated by Krasij et al. (U.S. Pat. 5,264,299).

For claims 2 and 7, Krasij et al. teaches a solid polymer electrolyte fuel cell comprising a plate-shaped electrode structure [20] sandwiched by first and second separators [11] and [12], with the electrode structure comprising a solid polymer electrolyte membrane [21] sandwiched by first and second gas diffusion layers [22] and [23] which, "[a]s is well known... may carry respective catalyst formations or layers at their major surfaces facing the proton exchange

membrane". Alternatively, the catalyst layer is directly on the membrane. See col. 5 line 1 et seq. In either configuration, the catalyst layers equate to first and second electrode layers where the first and second diffusion layers are disposed outside the corresponding electrode layers. The examiner notes that the specification is entirely silent on catalyst layer, but this feature is understood as disclosed, inherently, by the first and second electrode layers.

In Krasij et al., the solid polymer electrolyte membrane has a first jutting-out portion that juts out past the edge peripheries of both the first diffusion layer and the first electrode layer, and the second diffusion layer has a second jutting-out portion that juts out past the periphery of the second electrode layer and faces the first jutting-out portion. See Figure 2. The second jutting-out portion of the diffusion layer is impregnated by cured adhesive [24'] such as a silicon resin. See col. 6 lines 5-7 and lines 19-41.

For claims 2, 5, 6 and 8, the first and second jutting-out portions are joined together via a cured adhesive layer [24]. (Ib.) The portions are joined together insofar as [24'] used in the diffusion layer and [24] as a joining layer are the same material, and that the layer [24] both "penetrate[s] into and completely fills the pores of the support plate edge regions..." and "encases the proton exchange membrane 21 at its periphery." See col. 5 lines 27-40.

For claims 2, 9 and 10 and to the extent that claim 9 is understood for the reasons set forth under 35 U.S.C. 112, second paragraph (discussion above), each diffusion layer has at least areas corresponding to gas flow, as diffusion layers being porous bodies have by definition gas flow portions. A third jutting-out portion is equally present as already discussed for the first jutting-out portion, with the third jutting-out portion and solid polymer electrolyte membrane being joined together insofar as [24'] used in the diffusion layer and [24] as a joining layer are

the same material, and that the layer [24] both "penetrate[s] into and completely fills the pores of the support plate edge regions..." and "encases the proton exchange membrane 21 at its periphery." See col. 5 lines 27-40. A portion of each diffusion layer along its second-jutting out or third-jutting out portion is impregnated, i.e. its "edge regions", where its entire periphery is impregnated to transform the edge regions into impermeable frame portions. See col. 4 lines 57 to 65. The adhesive layers [24'] (shown in duplicate in Figure 2) results in the solid polymer electrolyte being interposed therebetween. one section of a gas passage-forming part (26) of the first separator (8) is in intimate contact with the third jutting-out portion (18) of the first diffusion layer (13) over the entire periphery thereof, one section of a gas passage-forming part (20) of the second separator (9) is in intimate contact with the second jutting-out portion (16) of the second diffusion layer (14) over the entire periphery thereof, and the first electrode layer (11) is separated from the cured adhesive layer (19) surrounding the first electrode layer (11). As shown by Figures 1 or 2, the separators [11] and [12] having gas-passage forming parts as indicated by channels [13] and [14] has its end sections in intimate contact with the second jutting-out portion.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.



Claims 1, 3, 4, 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Krasij et al. (U.S. Pat. 5,264,299) in view of Matlock et al. (U.S. Pat. 6,261,711).

The teachings of Krasij et al. are discussed above.

For claims 3 and 11, Krasij et al. does not explicitly teach the second electrode being staggered relative to the outer edge of the first electrode layer. However, Matlock et al. discloses one electrode in a fuel cell being staggered relative to the edge of the other. Matlock et al. in Figure 8. The skilled artisan would find obvious to modify Krasij et al. by staggering the electrodes relative to each other. The motivation for such a modification is to facilitate the additional modification of a gasket [199] and compressible member [100] to form a fluid tight seal. Matlock et al. in col. 5 lines 48-67.

For claims 1, 3, 4 and 12, Krasij et al. does not explicitly teach the first electrode separated from the surrounding adhesive layer. However, Matlock et al. discloses a gap between the electrode and a gasket [110]. Matlock et al. in Figure 8 and col. 5 line 53 et seq. It is noted that the gasket is specifically disclosed as being bonded to the surface, having a fluid seal feature and being made of an adherent material; a list of materials are disclosed in col. 6 line 25 et seq. Matlock et al. in col. 6 lines 4-24. It would have been obvious to one of ordinary skill in the art to employ a gap between the electrode and adhesive material in Krasij et al. in order to facilitate the use of a material having a "point pressure source..." which effects a fluid tight seal around the flow regions. Matlock in col. 5 line 53 et seq.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Julian Mercado whose telephone number is (571) 272-1289. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan, can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

/Julian Mercado/  
Examiner, Art Unit 1795

/PATRICK RYAN/  
Supervisory Patent Examiner, Art Unit 1795